



# Agenda

- ❖ Construction Emission Reduction Pilot Program with renewable diesel
  - Get to know Renewable Diesel
  - Renewable Diesel pilot projects
  - Renewable Diesel Standard Special Provisions (SSP)
- ❖ CARB proposed amendments in the off-road diesel fleets regulations



# Purpose of Construction Emission Reduction Pilot Program

## ❖ Caltrans 2020-24 Strategic Plan:

- Mitigation and leadership in climate action to reduce greenhouse gas (GHG) emissions

## ❖ Senate mandates:

- SB 32 - reduce GHG emission to 40% below 1990's levels by 2030
- SB 391 - reduce GHG emission to 80% below 1990's levels by 2050



# Get to know Renewable Diesel (RD)

- ❖ Newest alternative to petroleum (fossil) diesel
- ❖ Vehicle fuel produced from renewable raw materials
  - Waste animal fats, used cooking oil, vegetable oils, and more
- ❖ But...It's not biodiesel!!

# What is Tallow and other available feedstocks?

## Tallow - Rendered form of animal fat

- By product from the meat industry
- Uses include food, biodiesel, aviation fuel, printing, candles, lubrication, balms and beauty products and textiles

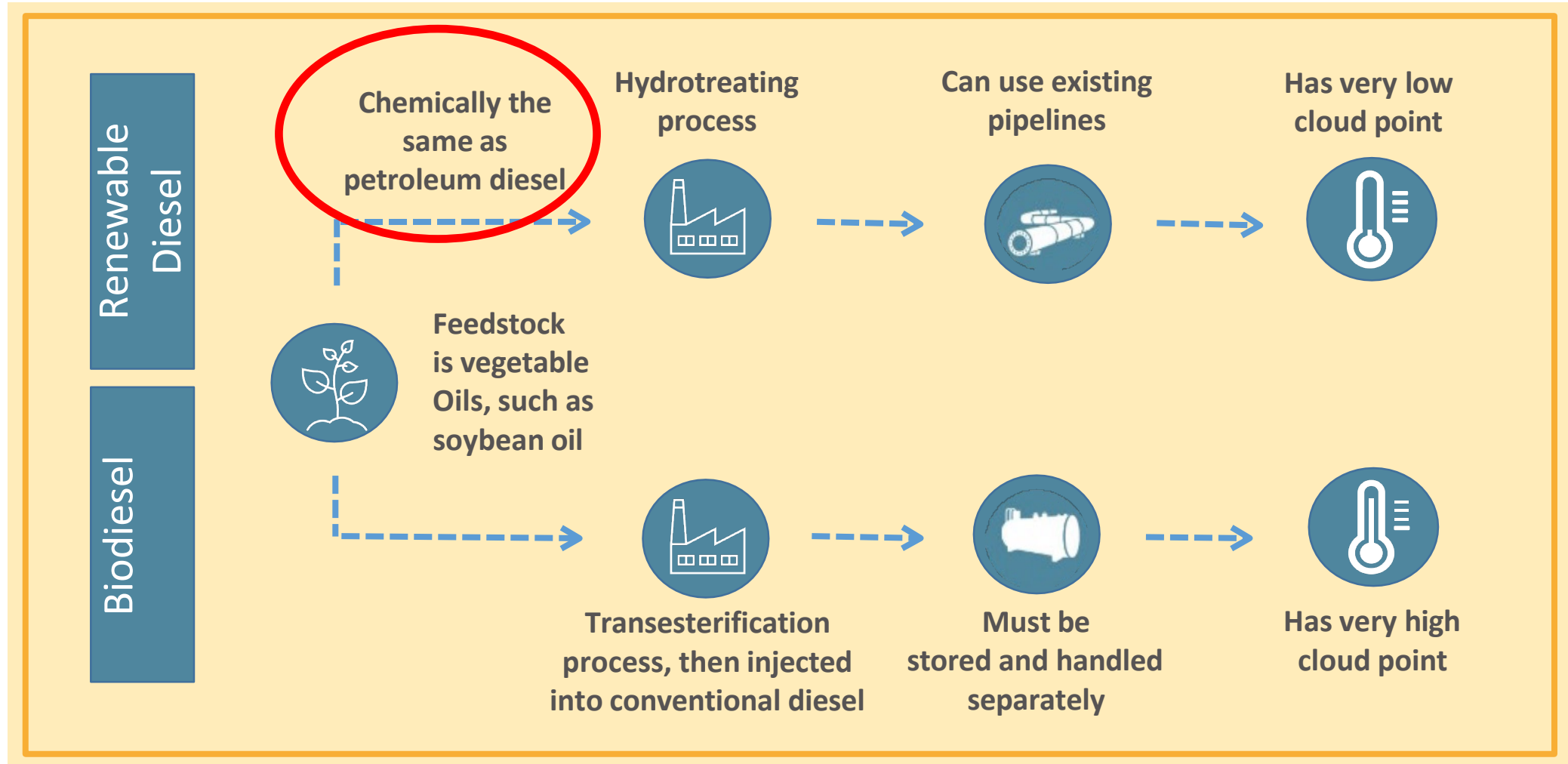
### Feedstock Pool

- Tallow – rendered animal fat / least carbon intensity
- Ethanol production byproducts (corn)
- Soybean or Canola Oil
- Palm Oil
- Used Cooking Oil
- Cover Crop (Carinata Oil)



# Renewable vs Bio-diesel

Renewable diesel chemically identical to convention diesel; however, biodiesel is less capital intensive.



<https://www.chsinc.com/about-chs/news/news/2021/11/29/renewable-diesel-vs-biodiesel>



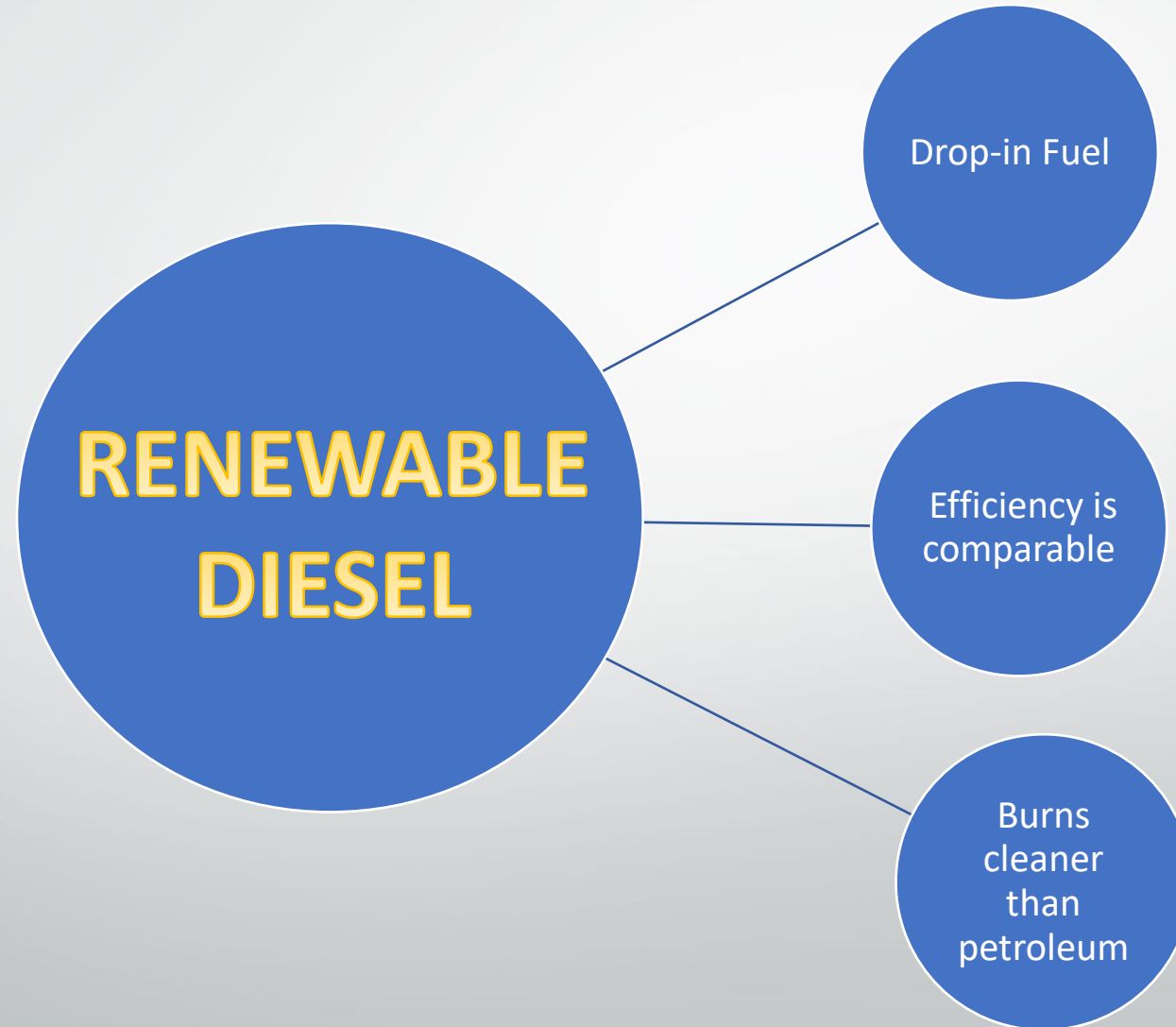
Renewable Diesel



Petroleum Diesel



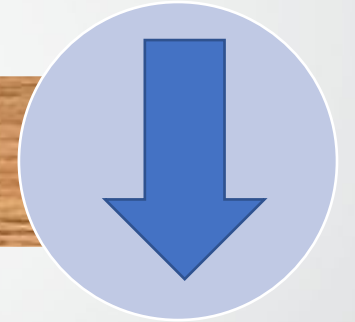
# Benefits of Using RD



# Benefits of Using RD (cont.)

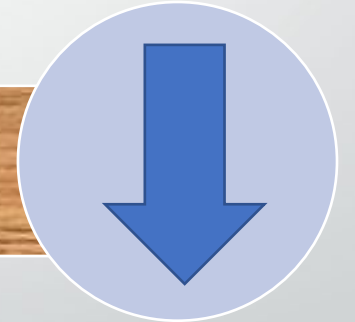
Particulate Matter (PM<sub>2.5</sub>)

Reduced up to 30%



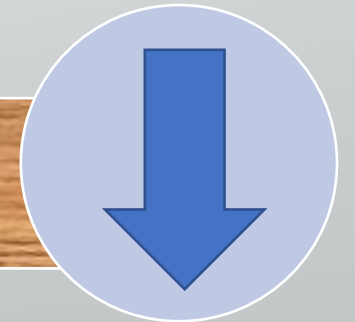
Nitrogen Oxides (NO<sub>x</sub>)

Reduced up to 10%



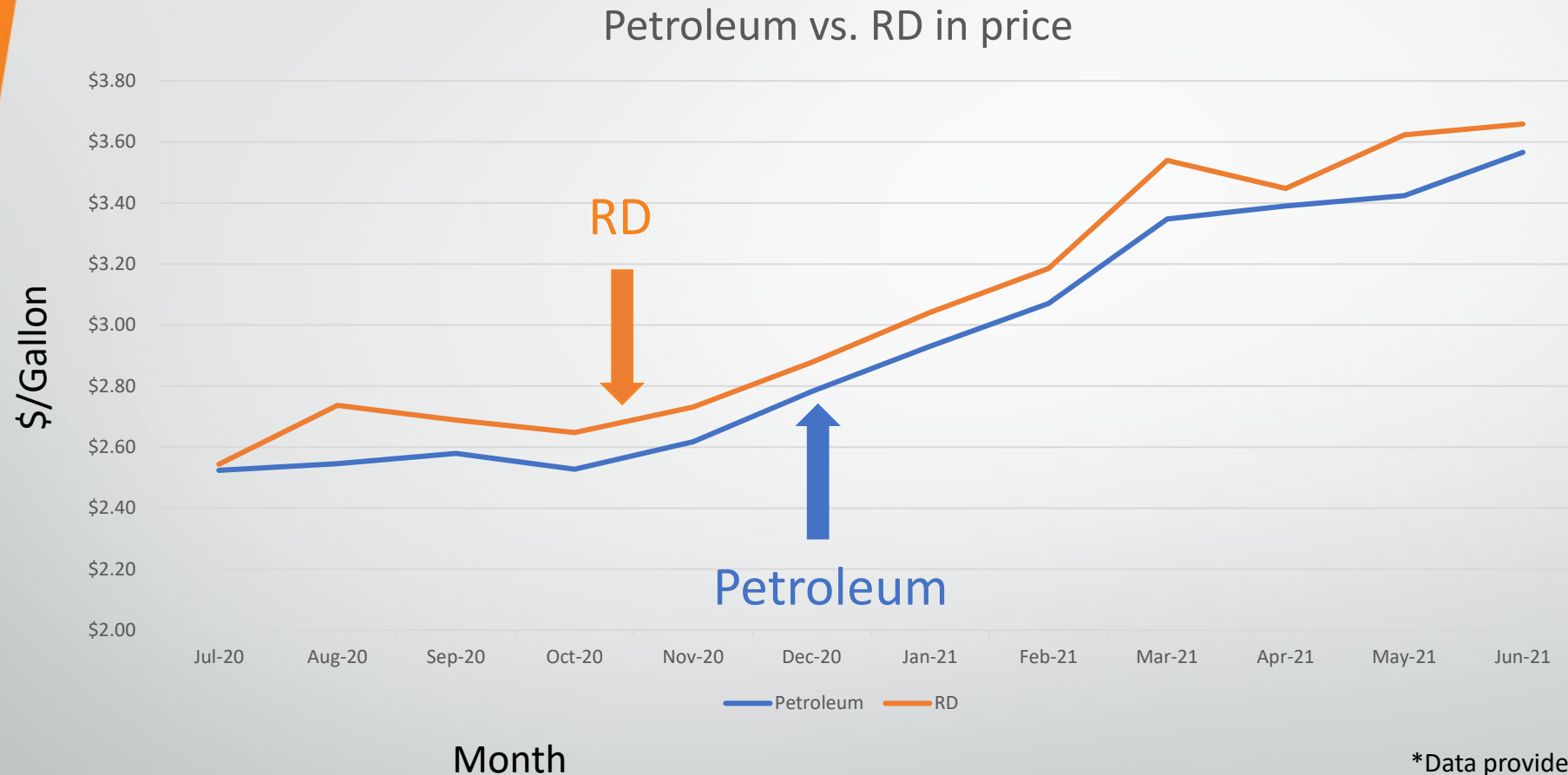
Lifecycle of Greenhouse gas (GHGs)

Reduced up to 80%





# Fuel Cost



\*Data provided by the Division of Equipment

	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Avg.
Petroleum	\$2.52	\$2.55	\$2.58	\$2.53	\$2.62	\$2.78	\$2.93	\$3.07	\$3.35	\$3.39	\$3.42	\$3.57	\$2.94
RD	\$2.54	\$2.74	\$2.69	\$2.65	\$2.73	\$2.88	\$3.04	\$3.19	\$3.54	\$3.45	\$3.62	\$3.66	\$3.06

= ~12¢/gal



# RD Pilot Projects

- ❖ Require the use of Renewable Diesel (RD) in off-road diesel equipment
- ❖ 15 pilot projects selected between 2019-2021 in D3, 4, 6, 7, 8, 10, 11, 12 (Air quality non-attainment areas).
- ❖ Various projects sizes (ranging from \$4 million to over \$100 million)
- ❖ Contractor required to submit RD usage report and RD purchase receipts

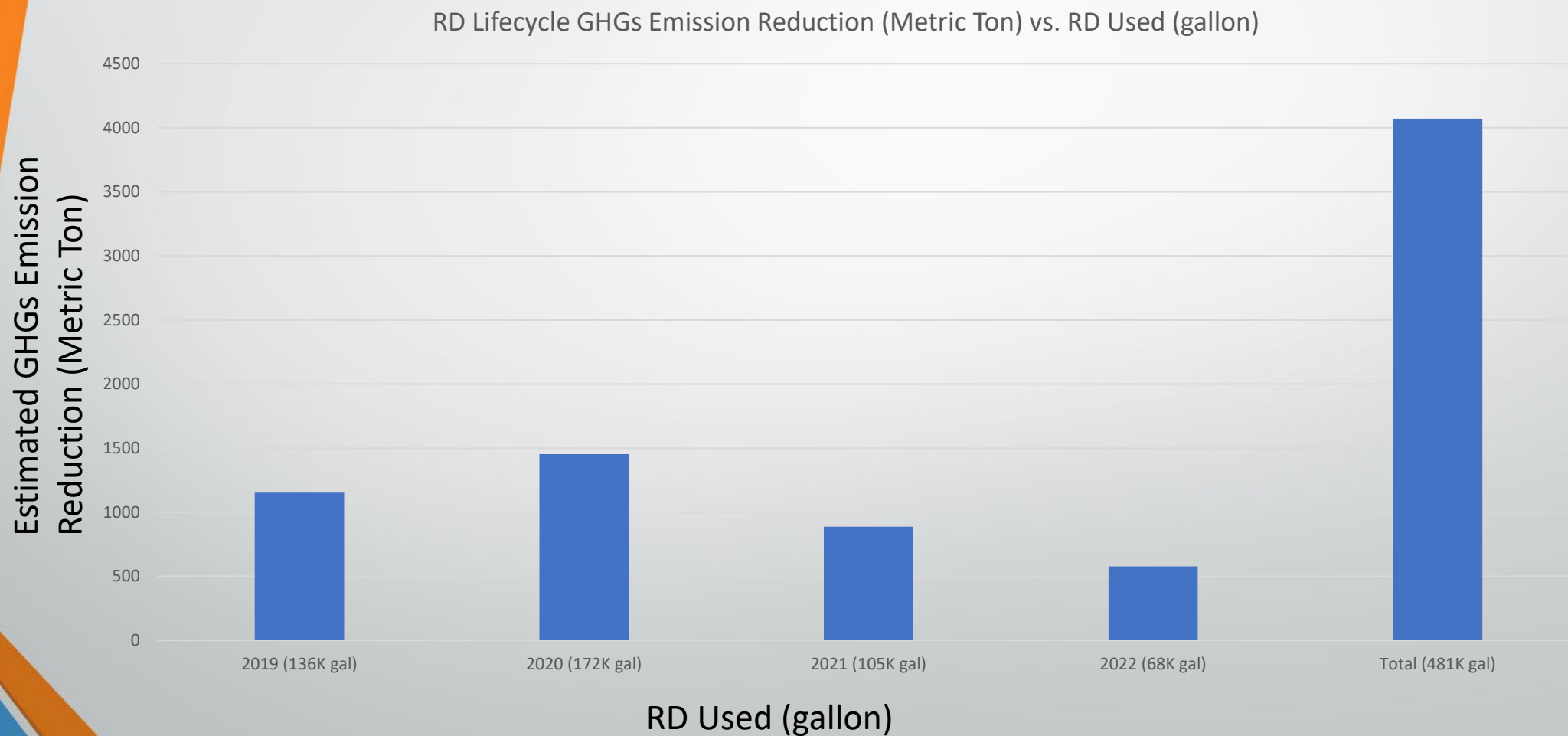




# Pilot Project Status

Project Status	# of Projects
Awarded - Completed	2
Awarded - Ongoing	9
Awarded – Construction has not begun	4
Total pilot projects	15

# Lifecycle GHGs Emission Reduction from RD Pilot Projects





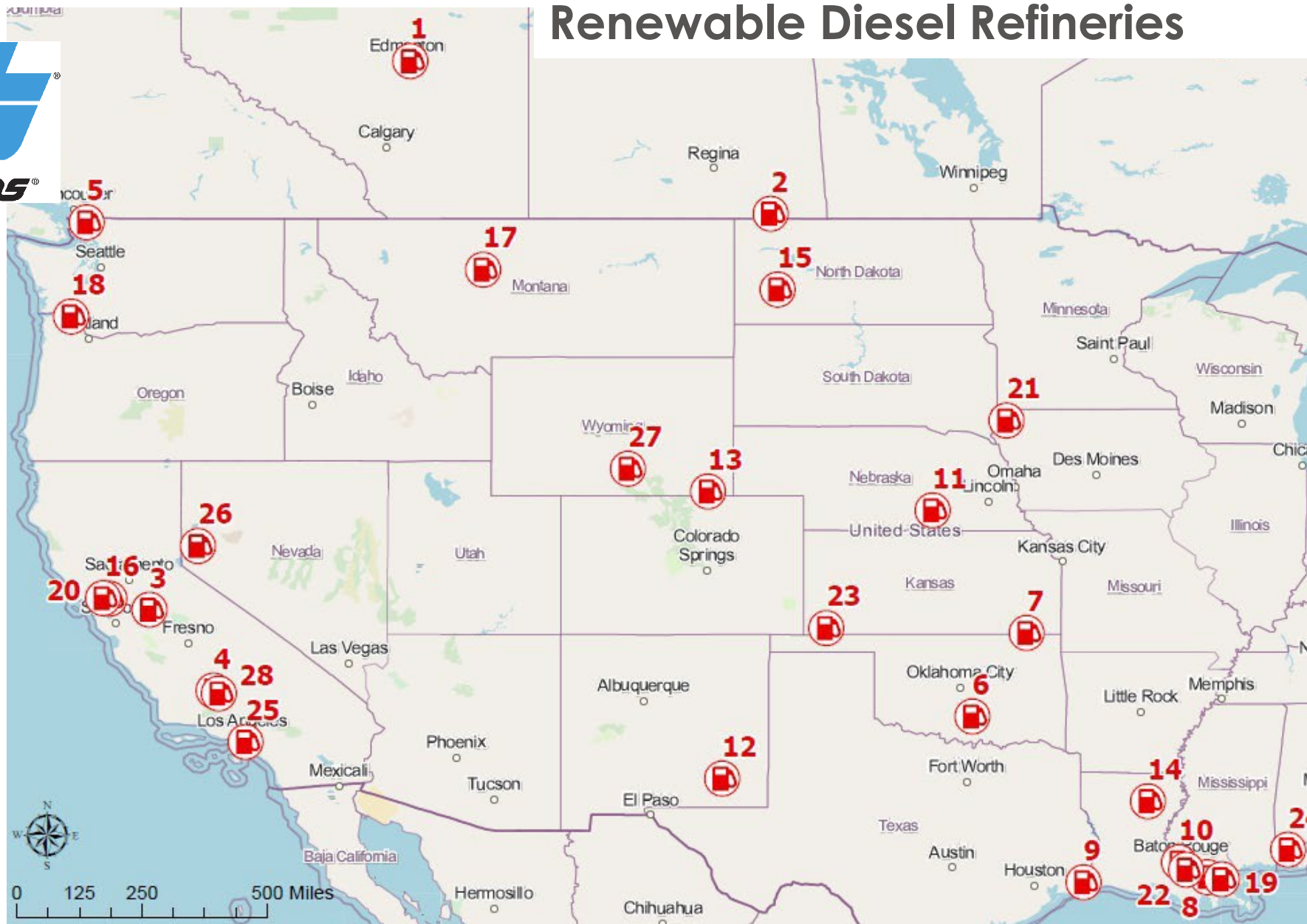


# RD Pilot Performance Measure

- ❖ Project administration challenges
- ❖ Cost impact
- ❖ Readily available
- ❖ Feedback from the users (field staff and industry)



# Renewable Diesel Refineries





# Estimated Total RD Production (USA)


- ❖ Current > 3.5 Million Gallons Per Day (MGD)
- ❖ 12/31/22 > 6.6 MGD
- ❖ 12/31/23 > 10.6 MGD
- ❖ 12/31/24 > 15 MGD
- ❖ 12/31/30 > 16.7 MGD

**Ave diesel use in US:  
128 MGD**



# RD Pilot Findings and Lessons Learned


- ❖ Beneficial regardless of contractor size
- ❖ Easily administered
- ❖ Overall cost to implement is insignificant
- ❖ Air pollution reduction



## SSP 5-1.35 “Renewable Diesel Required Use”

- ❖ Minimum of 95% RD in the fuel blend
- ❖ Applicable in District 3, 4, 6, 7, 8, 10, 11, 12 on projects greater than \$2 million, at least 100 working days, and with Roadway Excavation bid item quantity greater than 5,000 CY. (~40 proj/yr)
- ❖ Apply to prime contractors’ work and subcontractors who performs at least 5,000 CY of roadway excavation





## **SSP 5-1.35 “Renewable Diesel Required Use”**

- ❖ Contractors to submit renewable diesel reports quarterly to RE and [Renewablediesel@dot.ca.gov](mailto:Renewablediesel@dot.ca.gov)
- ❖ Contractors to submit renewable diesel purchase receipts if requested by the resident engineer
- ❖ Contractors may request to opt out of the required use of renewable diesel if certain conditions are met
- ❖ SSP will be published and implemented in October 2022



# CARB Proposed Amendments on Off-Road Diesel Fleets Regulation

- ❖ CARB is accepting comments on the draft proposed amendments
- ❖ Most likely to be adopted by the end of year
- ❖ Section 2449(J) “Public Works Awarding Bodies Requirements”
- ❖ Section 2449.1(e) “Renewable Diesel Requirements”



# Questions?



# Thank you!

Division of Construction  
Office of Construction Training and Environmental Compliance